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# CANADIAN LAND USE

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## ABSTRACT

This study examines the potential of Canada's prime agricultural land, the loss of agricultural land through urbanization, determinants of farmland prices, and land use and tenure programs in five Provinces. Approximately 38 million additional hectares of land could be used for farms in Canada, and wheat production under current cropping patterns could increase to 32 million tons, a 92-percent increase over the 1969/70 to 1978/79 10-year average of 16.7 million tons.

Key words: Canada, land use, land tenure, land prices, production potential, urbanization

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## SUMMARY

Although most of Canada's agricultural land—rated as Class 1-4 by the Canadian Land Inventory (CLI)—is already in farms, approximately 38 million additional hectares could be used for farms if all six CLI classes are considered. This study examines Canada's potential for crop production, the loss of production due to urbanization, the determinants of farmland prices, and Provincial land use and tenure programs dealing with these issues.

This study estimates that Canada has the land capability of increasing wheat production under current cropping patterns to 32 million tons—a 92-percent increase over the 1969/70 to 1978/79 10-year average of 16.7 million tons.

Although large agricultural areas within the urban fringe are being affected by urbanization, actual long-term losses in production appear to be significant only in Ontario.

High land prices caused by the growth of urban centers and land purchases by foreigners may make it uneconomical to use even prime land for agriculture in some areas. Since 1972, however, increases in farmland prices in Canada appear to be the result of rapid increases in farm income rather than the effects of population pressures on farmland values.

Five Provinces—Manitoba, Saskatchewan, Alberta, British Columbia, and Ontario—have developed land use and tenure programs. These programs are designed to preserve agricultural land for future agricultural production, maintain the family farm, and perpetuate the owner-operator rather than tenant-operator form of tenancy. Land tenure patterns in many Provinces are changing as the number of farms operated by full owners declines. Provincial legislation can check the reallocation of agricultural land to nonagricultural uses.

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# CANADIAN LAND USE

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## INTRODUCTION

Factors affecting agricultural production in Canada have important implications for the United States because of their potential impact on Canada's competitive exports of grain, oilseeds, and other selected commodities. This study examines Canada's agricultural production potential, the loss of agricultural land due to urbanization, and Provincial land use and tenure programs developed by five Provinces (Manitoba, Saskatchewan, Alberta, Ontario, and British Columbia) to deal with these issues.

These Provinces were selected for several reasons. The Prairie Provinces are Canada's major producers of grain and oilseeds in competition with the United States. Ontario, which contains one-third of the entire Canadian population, produces a wide range of agricultural products which compete with U.S. imports. British Columbia's comprehensive land use program serves as an example of land use programs in Canada. The Provincial land use programs discussed in this study should be viewed as case studies illustrating the ways in which legislation has dealt with land use and tenure issues in Canada.

This analysis will be useful to U.S. policymakers and researchers in understanding the implications of Canadian land use on Canada's agricultural production potential and in indicating Canada's competitive position in agricultural trade.

## AGRICULTURAL LAND PRODUCTION POTENTIAL

Two sources of information indicate the productivity of Canada's land—the Canadian Land Inventory (CLI) and the Canadian census. The CLI, undertaken as a Federal/Provincial cooperative program in 1963 to document the land potential of settled areas of Canada, provides an extensive picture of the country's national and regional land base.

### Canadian Land Inventory

The CLI rates soils according to their capability for agriculture, wildlife, recreation, and forestry. It covers 1 million square miles and encompasses all regions of Canada with agricultural capability. Areas outside CLI boundaries are not generally considered capable of sustaining agriculture, due to climate or topography (10).<sup>1</sup>

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<sup>1</sup>Italicized numbers in parentheses refer to references cited at the end of this report.

Soils are classified into seven categories according to their capacity for agricultural use (4):

1. No significant limitations for crop use.
2. Moderate, readily correctable limitations which restrict the range of crops grown and require the use of moderate conservation practices.
3. Moderately severe limitations restricting the range of crops planted and requiring special conservation practices, but still considered moderately high in productivity.
4. Severe limitations restricting the range of crops or requiring special conservation practices, with low to medium productivity.
5. Very severe limitations; used for permanent pasture only through intensive management.
6. Capable of producing perennial forage crops, but marginal for agricultural use; management practices not feasible.
7. Not capable of sustaining agriculture or permanent pasture.

Classes 1-3 are considered capable of producing commonly cultivated crops. Class 4 can be used for crops but has marginal capability. Under present economic conditions, land with class 4 capability is considered the break-even point for commercial agriculture. Class 5 is capable of growing improved pasture and hay. Class 6 can sustain native pasture (14).

Preliminary CLI data provide information on 172 million hectares, or 19 percent of total Canadian land area. When data are compiled for British Columbia and Newfoundland, the inventory is expected to cover 29 percent of total Canadian land area. According to available CLI data, 89 percent of Canadian land cannot sustain any type of agriculture. The remaining 11 percent falls within classes 1-6 and has some agricultural potential. Less than 1 percent of Canada's potential agricultural land is classified as class 1, and 1 percent is classified as class 6 (table 1).

Ontario accounts for only 12 percent of the country's total potential agricultural land area (classes 1-6), but comprises 52 percent of its total class 1 land area, or most of Canada's prime agricultural land. The Prairie Provinces (Manitoba, Saskatchewan, and Alberta) in comparison make up 73 percent of Canada's potential agricultural land but only 47 percent of Canada's prime (class 1) agricultural land. The majority of land in the three Prairie Provinces is either class 5 (22 million hectares) or class 3 (18 million hectares) (10).

## Land Capability

The CLI also provides an indication of Canadian agricultural land resources, listing land by potential for alternative uses. It does not, however, indicate how land of any given potential is presently used. This can be estimated indirectly by comparing CLI land classes with the Canadian census of agriculture for land in farms. Census measurements of present land use are broken down in terms of improved and unimproved land rather than CLI class capability. It is therefore necessary to assume that land presently used for farms, as indicated by the census, falls within the 172 million hectares covered by the CLI, and that land presently used for crops falls within classes 1-4.



Table 1—Potential agricultural land and land in farms, 1976

Province	Total land area	Area covered by the CLI <sup>1</sup>	Potential agricultural land			Other land in the CLI area <sup>2</sup>	Land in farms, 1976		
			Prime agricultural land class 1	Arable land classes 1-4	Marginally arable land classes 5-6		Total area in farmland	Improved farmland	Unimproved farmland
1,000 hectares									
Newfoundland	37,048	—	—	—	—	—	30	10	20
Prince Edward Island	563	563	0	452	76	34	278	194	84
Nova Scotia	5,296	5,296	0	1,573	96	3,627	400	148	253
New Brunswick	7,145	7,145	0	3,346	1,712	2,087	402	172	231
Quebec	135,677	30,221	20	4,795	1,670	23,756	3,654	2,245	1,409
Ontario	89,118	27,530	2,157	9,909	3,056	14,565	5,967	4,333	1,634
Manitoba	54,849	19,277	163	7,524	4,323	7,430	7,611	5,182	2,429
Saskatchewan	57,026	34,455	1,000	20,075	11,442	2,938	26,433	18,896	7,537
Alberta	64,438	47,894	787	20,019	15,034	12,840	20,040	11,791	8,249
British Columbia	93,052	—	—	—	—	—	2,352	736	1,615
Yukon	53,183	—	—	—	—	—	—	—	—
Northwest Territories	324,634	—	—	—	—	—	—	—	—
Canada	922,030	172,381	4,125	67,695	37,410	67,276	67,167	43,707	23,461

— = not available.

<sup>1</sup>Yukon and Northwest Territories are not covered by the CLI.

<sup>2</sup>Includes class 7 land, organic soils, and unclassified land in the CLI area which comprises urban areas, Provincial parks, national parks, and forest reserves.

Sources: Environment Canada, Lands Directorate. *Land Capability for Agriculture, Canada Land Inventory Preliminary Report*. April 1976, and Statistics Canada. *Census of Agriculture*. 1976.

The 1976 census of agriculture indicates that 67 million hectares were used for farms. Two-thirds of this amount were improved land consisting of 39 million hectares of crops and summer fallow and 5 million hectares of improved pasture. Unimproved land consists of 4 million hectares of woodland and 19 million hectares of brush, grazing land, marsh, or slough (table 1).

A comparison of census farm area with the quantity of potential agricultural land covered by the CLI indicates that the amount of improved and unimproved land in farms is about equal to the amount of land in the first four CLI classes. Most of Canada's best agricultural land is already in farms. An additional 38 million hectares of agricultural land could be incorporated into farms if all six CLI classes are considered.

Although most class 1-4 land is in use, there is evidence that not all is used for crop production. Area in crop and summer fallow combined amounts to 39 million hectares, or about 58 percent of land classes 1-4.

Ontario, Manitoba, Saskatchewan, and Alberta are major crop producing Provinces, which account for 78 percent of Canadian farm cash receipts. What if all available class 1-4 land in these Provinces were allocated to crop production? It is assumed that changes in the economic environment necessary for the allocation of this land to crop production would occur and that present technology and cropping patterns would be maintained on the expanded area. It is also assumed [as in Shields and Ferguson (33)] that production on the expanded area would reflect a high level of management skill and would therefore provide an estimate of the land's maximum productive capacity. Since the percentage of production of various crops on each class of land is not known, it is necessary to convert the total quantity of land in classes 1-4 to a class 1 equivalent (33).

If yields for class 1 land in the Prairie Provinces are rated as the highest possible, then classes 2, 3, and 4 are 85, 70, and 50 percent as productive, respectively, as class 1 land (33). For the rest of Canada, classes 2, 3, and 4 are 80, 64, and 50 percent as productive as class 1 land (34). The class 1 equivalent of the four classes is determined by multiplying the area of each class by its respective performance index. Thus the total quantity of class 1-4 land in Saskatchewan, for example, which is 20 million hectares, is productively the equivalent of 14.5 million hectares of class 1 land. Estimated potential yields for various crops on class 1 land were applied to the class 1 equivalent totals to derive potential production if all class 1-4 land were used (33).

The greatest potential for crop expansion exists in Ontario, where production could more than double. Currently, land used for farms in Ontario is equivalent to about 60 percent of class 1-4 land for the Province. Ontario, with a much milder climate than the Prairie Provinces, has the greatest number of frost-free days. Also, since the majority of class 1 land is located in Ontario, the Province's productive potential is high in terms of yields and range of crops (see tables 2-5).

Potential for increases in crop production are also quite high in Alberta. Although production of wheat, oats, barley, rye, flaxseed, and rapeseed could more than double (table 5), climatic factors limit the range of production to small grains, oilseeds, and forage. Saskatchewan accounts for about two-thirds of Canadian wheat production and has the lowest potential for crop expansion of the four Provinces. Production of wheat, oats, and barley,

Table 2—Potential crop production on class 1-4 land, Ontario

Crop	Area <sup>1</sup>	Yield <sup>2</sup>	Average production <sup>3</sup>	Class 1 equivalent area <sup>4</sup>	Potential yield on class 1 equivalent area <sup>5</sup>	Production on class 1 equivalent area <sup>6</sup>	Potential production increase
	1,000 hectares	Metric tons per hectare	1,000 metric tons	1,000 hectares	Metric tons per hectare	1,000 metric tons	Percent
Wheat	213	2.89	616	443	5.36	2,374	285
Oats	188	2.02	380	391	3.42	1,337	252
Barley	148	2.65	392	308	4.32	1,331	240
Rye	23	1.81	42	48	3.78	181	331
Corn	635	5.16	3,277	1,318	8.51	11,216	242
Tame hay	1,096	5.65	6,192	2,279	7.50	17,093	176
Fodder corn	347	28.45	9,872	721	42.00	30,282	207
Potatoes	18	21.49	387	37	30.00	1,110	187
Other crops	747	—	—	1,555	—	—	—
Total	3,415	—	—	7,100	—	—	—

— = not applicable.

<sup>1</sup>1976 census area. Source: Statistics Canada. *Census of Agriculture, 1976*.<sup>2</sup>1967-76 average. Source: Canada Grains Council. *Statistical Handbook*, various issues.<sup>3</sup>1976 census area times 1967-76 average yield.<sup>4</sup>Ontario class 1-4 land times the performance index of 1, .80, .64, and .50 for each class respectively, proportionately allocated to crops according to the 1976 cropping pattern.<sup>5</sup>Source: J. A. Shields and J. L. Nowland. *Additional Land for Crop Production: Canada*. Proceedings of the 30th annual meeting of the Soil Conservation Society of America, August 1975, San Antonio, Texas.<sup>6</sup>Class 1 equivalent area times potential yield on class 1 equivalent area.

Table 3—Potential crop production on class 1-4 land, Manitoba

Crop	Area <sup>1</sup> 1,000 hectares	Yield <sup>2</sup> Metric tons per hectare	Average production <sup>3</sup> 1,000 metric tons	Class 1 equivalent area <sup>4</sup> 1,000 hectares	Potential yield on class 1 equivalent area <sup>5</sup> Metric tons per hectare	Production on class 1 equivalent area <sup>6</sup> 1,000 metric tons	Potential production increase Percent
Wheat	1,541	1.73	2,666	1,685	2.90	4,887	83
Oats	494	1.76	869	540	3.20	1,728	99
Barley	666	2.02	1,345	728	3.80	2,766	106
Mixed grains	70	2.02	141	77	3.20	246	74
Rye	37	1.42	53	40	2.50	100	87
Buckwheat	18	.81	15	20	1.00	20	33
Corn	7	3.41	24	8	3.80	30	25
Tame hay	567	4.10	2,325	620	6.70	4,154	79
Fodder corn	13	15.92	207	14	22.40	314	52
Flaxseed	212	.67	142	232	1.50	348	145
Sunflower	20	.89	18	22	1.00	22	22
Rapeseed	93	1.01	94	102	1.50	153	63
Mustard seed	7	.88	6	8	1.20	10	67
Other crops	84	—	—	91	—	—	—
Summer fallow	926	—	—	1,013	—	—	—
Total	4,755	—	—	5,200	—	—	—

— = not applicable.

<sup>1</sup>1976 census area. Source: Statistics Canada. *Census of Agriculture, 1976*.

<sup>2</sup>1967-76 average. Source: Canada Grains Council. *Statistical Handbook*, various issues.

<sup>3</sup>1976 census area times 1967-76 average yield.

<sup>4</sup>Manitoba class 1-4 land times the performance index of 1, .85, .70, and .50 for each class respectively, proportionately allocated to crops according to the 1976 cropping pattern.

<sup>5</sup>Source: J. A. Shields and J. L. Nowland. *Additional Land for Crop Production: Canada*. Proceedings of the 30th annual meeting of the Soil Conservation Society of America, August 1975, San Antonio, Texas.

<sup>6</sup>Class 1 equivalent area times potential yield on class 1 equivalent area.



Table 4—Potential crop production on class 1-4 land, Saskatchewan

Crop	Area <sup>1</sup> 1,000 hectares	Yield <sup>2</sup> Metric tons per hectare	Average production <sup>3</sup> 1,000 metric tons	Class 1 equivalent area <sup>4</sup> 1,000 hectares	Potential yield on class 1 equivalent area <sup>5</sup> Metric tons per hectare	Production on class 1 equivalent area <sup>6</sup> 1,000 metric tons	Potential production increase Percent
Wheat	7,159	1.61	11,526	5,843	2.90	16,945	47
Oats	637	1.81	1,153	520	3.20	1,664	44
Barley	1,201	2.08	2,498	980	3.80	3,724	49
Mixed grains	48	1.99	96	39	3.20	125	30
Rye	110	1.23	135	90	2.50	225	67
Tame hay	871	3.36	2,927	711	6.70	4,764	63
Fodder corn	2	7.46	15	2	22.40	45	200
Flaxseed	83	.87	72	68	1.50	102	42
Sunflower	2	.72	1	2	1.00	2	100
Rapeseed	292	1.00	292	238	1.50	357	22
Mustard seed	19	.96	18	16	1.20	19	6
Other crops	165	—	—	134	—	—	—
Summer fallow	7,177	—	—	5,857	—	—	—
Total	17,766	—	—	14,500	—	—	—

— = not applicable.

<sup>1</sup>1976 census area. Source: Statistics Canada. *Census of Agriculture, 1976*.<sup>2</sup>1967-76 average. Source: Canada Grains Council. *Statistical Handbook*, various issues.<sup>3</sup>1976 census area times 1967-76 average yield.<sup>4</sup>Saskatchewan class 1-4 land times the performance index of 1, .85, .70, and .50 for each class respectively, proportionately allocated to crops according to the 1976 cropping pattern.<sup>5</sup>Source: J. A. Shields and J. L. Nowland. *Additional Land for Crop Production: Canada*. Proceedings of the 30th annual meeting of the Soil Conservation Society of America, August 1975, San Antonio, Texas.<sup>6</sup>Class 1 equivalent area times potential yield on class 1 equivalent area.



Table 5 — Potential crop production on class 1-4 land, Alberta

Crop	Area <sup>1</sup> 1,000 hectares	Yield <sup>2</sup> Metric tons per hectare	Average production <sup>3</sup> 1,000 metric tons	Class 1 equivalent area <sup>4</sup> 1,000 hectares	Potential yield on class 1 equivalent area <sup>5</sup> Metric tons per hectare	Production on class 1 equivalent area <sup>6</sup> 1,000 metric tons	Potential production increase Percent
Wheat	2,243	1.80	4,037	2,852	2.90	8,271	105
Oats	724	1.99	1,441	920	3.20	2,944	104
Barley	2,276	2.16	4,916	2,894	3.80	10,997	124
Mixed grains	108	2.22	240	137	3.20	438	83
Rye	73	1.50	110	93	2.50	233	112
Tame hay	1,541	3.65	5,625	1,959	6.70	13,125	133
Flaxseed	30	.92	28	38	1.50	57	104
Rapeseed	299	.94	281	380	1.50	570	103
Mustard seed	9	.89	8	11	1.20	13	63
Other crops	311	—	—	396	—	—	—
Summer fallow	2,611	—	—	3,320	—	—	—
Total	10,225	—	—	13,000	—	—	—

— = not applicable.

<sup>1</sup>1976 census area. Source: Statistics Canada. *Census of Agriculture*, 1976.<sup>2</sup>1967-76 average. Source: Canada Grains Council. *Statistical Handbook*, various issues.<sup>3</sup>1976 census area times 1967-76 average yield.<sup>4</sup>Alberta class 1-4 land times the performance index of 1, .85, .70, and .50 for each class respectively, proportionately allocated to crops according to the 1976 cropping pattern.<sup>5</sup>Source: J. A. Shields and J. L. Nowland. *Additional Land for Crop Production: Canada*. Proceedings of the 30th annual meeting of the Soil Conservation Society of America, August 1975, San Antonio, Texas.<sup>6</sup>Class 1 equivalent area times potential yield on class 1 equivalent area.

for example, could increase only by about half, indicating that a large proportion of the available agricultural land in the Province is already being used for crops (table 4).

If all class 1-4 land were allocated to crop production under existing cropping patterns, total Canadian wheat production could expand to 32 million tons (a 92-percent increase over the 1969/70 to 1978/79 10-year average production level), oat production could increase to 7.7 million tons, or 78 percent, and barley to 18.8 million tons, or 63 percent. These rates could change if cropping patterns are altered. In addition, a change in technology resulting in a decline in the use of summer fallow in the Prairie Provinces, for example, would mean a much larger increase in wheat production (33).

## **LAND USE PROGRAMS**

Five Provinces—Manitoba, Saskatchewan, Alberta, British Columbia, and Ontario—have developed agricultural land use and tenure programs. The issues that these programs deal with are interrelated and complex. Land tenure programs concern owner versus tenant farming and family versus corporation farming. These programs seek to maintain the family farm in a rural social infrastructure and perpetuate owner-operated rather than tenant-operated farming.

Land use programs deal with the allocation of land between competing uses, urban versus agricultural. Land use priorities are largely determined by a combination of the economic resource base and the philosophical orientation of the political party in power in the Province.

### **Federal versus Provincial Jurisdiction**

Both land use and tenure programs in Canada fall under the jurisdiction of the Provincial governments. The Provinces maintain extensive powers for implementing land control measures under the British North America Act (BNA Act).<sup>2</sup> As the Act is generally interpreted, the Provinces are constitutionally empowered to: (1) develop laws concerning the purchase or expropriation of land for public recreational use, (2) implement differential tax structures so that local landowners using land for specific purposes such as agriculture do not bear the burden of increased property assessments resulting from nonresident purchases, (3) establish land use and zoning controls, and (4) require disclosure of the place of residence, citizenship, and other pertinent information concerning persons owning or purchasing land in the Province.

It is unclear under the BNA Act whether Provinces were empowered to directly restrict land sales to aliens, since exclusive legislative jurisdiction in

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<sup>2</sup>The BNA Act is a component of the Canadian constitution. It created the Canadian Federal union and delineates the distribution of powers between the Federal and Provincial Governments. The Parliament of Canada was granted legislative jurisdiction over subjects of common interest while Provincial legislatures were given jurisdiction over matters of local interest.

matters relating to aliens was relegated to the Federal Government. Section 33 of the Canadian Citizenship Act granted aliens equal rights as citizens in acquiring property in Canada (12). Effective February 15, 1977, however, the Federal Government amended Section 33 of the act, allowing a Province to pass regulations controlling land sales to aliens. To date, Alberta is the only Province which has done so under Section 33 of the Citizenship Act. Under the amended law, Provinces cannot restrict ownership in such a way that will conflict with Canada's international legal obligations, discriminate between aliens on the basis of nationality, restrict acquisitions by permanent residents, hinder foreign states in acquiring property for diplomatic and consular purposes, or restrict the acquisition of land approved under the Foreign Investment Review Act (FIRA)<sup>3</sup> (40).

## Urbanization and Land Use

Canada's best agricultural land borders the country's rapidly growing urban centers. These urban centers figure significantly in determining land use. Cleared farmland is preferred for urban building, for example, because development costs are relatively cheap (4).

Urbanization influences agricultural land use (1) directly through the actual incorporation of former agricultural land into expanding urban centers and (2) indirectly through changes in the economic environment of urban fringe areas which result in a transition from agricultural to urban-oriented land uses. Urban "commutersheds" and their concomitant highways, housing developments, and recreational facilities, for example, exert influence on land use patterns some distance from the boundaries of the urban center. The growing demand for land puts pressure on land prices to reflect urban values instead of the value derived from agricultural capability. When the return from other uses exceeds that derived from farming, the agricultural use of the land is no longer considered justified on economic grounds and the land is allocated temporarily or permanently to alternate uses. This phenomenon often means abandoned farms, land left idle under speculation, or serious financial difficulties for those who continue to farm (21).

Areas with moderate climate and level terrain conducive to both agriculture and human habitation are limited. They are located in a long narrow strip along the U.S.-Canadian border with particularly heavy concentrations along the lower Great Lakes and the St. Lawrence River in Ontario and Quebec Provinces, and along the coast and intermontane valleys of British Columbia. This congruity in area for agriculture and population results in a direct competition for use of land, much of which is classified as Canada's best for agricultural production. This competition is perceived to be affecting the allocation of agricultural land to nonagricultural uses. British Columbia and Ontario have developed agricultural land use programs to deal with these issues.

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<sup>3</sup>Under the FIRA, the Foreign Investment Review Agency established Dec. 12, 1973, assesses any benefit accruing to Canada when non-Canadians acquire control of Canadian business enterprises or establish new businesses in Canada. The agency is responsible to the Minister of Industry, Trade, and Commerce. Some land acquisitions would come under FIRA review if they involved a business with gross assets of at least \$250,000 or gross annual revenue of \$3 million.



## British Columbia

The British Columbia agricultural land use program implemented by the Land Commission Act was one of the first comprehensive attempts on the part of a Province to redirect the process of agricultural land allocation to nonagricultural uses. British Columbia consists of a series of north-south mountain ranges with 90 percent of the land mountainous and nonarable. Agriculture is limited to the narrow fertile valleys between the mountains. The agroclimatic characteristics of the valleys, however, are conducive to producing such specialty crops as soft fruits, grapes, and tobacco (20). Because crops are produced in the intermontane valleys to which access is restricted by mountains or sea, British Columbia farms are relatively small, highly specialized, and faced with major transportation constraints (16). The average farm size is 126 hectares, compared to an average of 201 hectares for total Canada and 374 hectares for Saskatchewan. Rapid population growth has led to competition for use of the same topographically limited land; this competition has resulted in land prices rising higher than is warranted by the land's agricultural productive potential (16).

The Provincial Government became increasingly concerned about the Province's ability to produce food on a very narrow land resource base that was being affected by urban development during the early seventies. British Columbia is highly dependent on imported food to meet local demand. The Government, recognizing the Province's high dependency on outside supply, became more sensitive to keeping future land use options open. It soon sought a way to plan urban land uses in a more orderly way while preserving remaining farmland (41).

In December 1972, the Provincial Government placed a moratorium on all future use of certain agricultural land for purposes other than farming. Two Orders-In-Council, one in December 1972 and one in January 1973, prohibited changes in use of land over 0.81 hectare classified as farmland for taxation, zoned for agriculture, or designated as having CLI capability of 1-4 (20). Land did not have to be in actual agricultural production to be affected by the moratorium, only to fit into one of the categories (41). Bill 42, the Provincial Land Commission Act, as introduced in February 1973, aimed to preserve agricultural land for farm use and establish and maintain the family farm.<sup>4</sup> Farm use was defined as the occupation or use of agricultural land for genuine farm purposes as well as certain other uses compatible with the preservation of land for farm use (26).

Section 2 of the Land Commission Act created the Land Commission, a five-member board which would establish agricultural land reserves (ALR) in the 28 regional districts of the Province. The land reserves were to include all land capable of sustaining agriculture—that is, all CLI class 1-4 land which had not been irreversibly developed. If nonagricultural land was not immediately available for urban expansion, land sufficient for 5 years of urban growth was excluded from the reserve. Lower capability land was included in the reserve where there was evidence that it could be used successfully in conjunction with class 1-4 land. Class 7 land was included in those instances

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<sup>4</sup>In September 1977, the Land Commission Act was amended, the Land Commission title changed to the Agricultural Land Commission, and its agricultural orientation strengthened.

where excluding it would result in nonagricultural use of an otherwise agricultural area (20). Land was also exempt from the reserve if it had been continuously used for a nonagricultural purpose 6 months prior to December 21, 1972 (4).

The Provincial Government maintained review and veto power over the ALRs developed by the regional districts. As the Provincially approved ALR plans came into effect, they replaced the previous moratorium on land use (20). Land designated as part of an ALR could not be used for any purpose other than farming except as permitted by the Land Commission Act or by order of the Commission (6). Procedures were established for appealing an ALR designation. All ALR plans were completed by 1975, and as of January 1, 1978, the total area within the ALRs was 4.7 million hectares (20).

The Provincial Government recognized that by limiting the use of land to agricultural purposes, it was denying farmers the opportunity to cash in on the increased value of their land (16). Land sales often served as a form of farm retirement pension. On the other hand, it was argued that farmers should make a living from farming, not land speculation, and that proceeds from that living should permit them to retire on a decent income (4).

The British Columbia Farm Income Assurance Program (FIAP) was introduced in November 1973 as a corollary to the Land Commission Act. It provides income protection for farmers operating under an ALR plan, with producers contributing one-third and the Provincial Government two-thirds of the premiums to an assurance fund. Indemnities are paid out of the fund when market returns fall to a specified percentage of the basic cost of production, which is calculated to include labor, management, depreciation, interest on investment, and cash operating costs (16). The programs, which are effective for 5 years, have operated for fruit trees, beef, dairy, hogs, field tomatoes, greenhouse vegetables, table eggs, broiler hatching eggs, sheep, blueberries, and potatoes (17). As of September 1977, \$89 million had been paid under the program to about 5,000 producers, representing average payments of \$17,800 per producer.

The British Columbia land use program has been in effect long enough to make an assessment of its impact on land allocation to urban and agricultural uses. Manning and Eddy (20) found that the British Columbia ALR did bring about a major shift in the location of new residential and commercial development. The ALR also prevented much change in land use within its boundaries. The rate of subdivision within the ALR, for example, was considerably lower than in undesignated areas.

The designation of land as agricultural within an ALR plan, however, was not enough to assure that the land was actually used for agricultural production. In the short-term period of the study, much of the ALR land was left idle because returns from farming were insignificant in relation to the costs of capital investment on land purchased at prices reflecting demand for the land for urban subdivisions (20). If economic conditions are not conducive to allocating land to agricultural production, opportunity costs are incurred by keeping land in agriculture and even more by leaving it idle. Both the British Columbia and Ontario agricultural land use programs incorporate farm income stabilization programs, which in effect represent a social payment to farmers for not reallocating their land to alternative uses. The British



Columbia program has apparently been successful in keeping land in agriculture, although at a relatively high social cost.

## Ontario

Ontario is the home of a major part of the Canadian population and is the country's industrial center. It is similar to British Columbia in its agroclimatic capability of producing a wide range of specialty crops, including corn, soybeans, soft fruit, and tobacco, which cannot be produced elsewhere domestically as efficiently. Ontario, however, does not face the constraints imposed on British Columbia by its rugged topography. Most of Canada's prime agricultural land is located in Ontario, and transportation to markets and sources of inputs is not a major cost of production as in British Columbia. The Province does experience intense competition for use of prime agricultural land. Speculation and nonfarm investment stemming from urban-oriented population pressures are identified as major factors driving up the price of land, making it difficult for farmers in the Province (21).

The Ontario Government has not placed a moratorium on use of farmland as in British Columbia (42). Like the latter, however, one of the motives for Ontario's developing a land use program to preserve agricultural land was to reduce future dependence on other nations for those commodities which can be produced within the Province (22).

Ontario agricultural land use programs were developed on the premise that (1) land use will be determined by the operation of the market place to the greatest extent possible, (2) that tradeoffs will be made between economic growth and desired land use patterns, (3) that land use programs be conducted and enforced at the local municipal level, and (4) that the Provincial Planning Act would be the main vehicle used to achieve Provincial land use policy objectives.

Under the Provincial Planning Act, a designated planning area (which may be a single municipality, groups of municipalities, or a region) may draw up an official land use plan, a statement of the development policies of the region. It may include a map and text showing land use allocations. The plan by itself does not indicate how any piece of property may be used. Zoning and other bylaws, however, which state specifically what may or may not be done on individual parcels of property, must conform to an Official Plan. The Province maintains ultimate review and veto authority over the regional Official Plans (24).

An Official Plan is expected to remain flexible, and is therefore subject to review and amendment. An amendment may represent an actual change in policy or a refinement of existing policy. In the former instance, the Official Plan would have to be changed before zoning bylaws could be implemented to permit the new use. In the latter instance, the change would merely be added to the plan (24).

The Ontario Planning Act, administered by the Ontario Ministry of Housing, was originally devised to solve urban problems. The Ontario Ministry of Agriculture, however, provides agricultural expertise as part of the development plan review process. Although Official Plans have not been developed for all regions, the ultimate goal is to have all settled areas of the Province under a plan.

The Ontario Ministry of Agriculture has been working to develop a more comprehensive agricultural land use program and guidelines under which agricultural considerations can be incorporated into local plans under the Planning Act. The Ministry released a policy statement (23) in March 1976, specifying the government's commitment to preserve better agricultural land and to maintain the economic feasibility of using such land for agricultural purposes (42). These policy objectives could be achieved through Provincial commodity stabilization programs, production expansion programs, agricultural economics research, and development of a market value tax assessment to relieve the burden of real estate taxes on farmland.

The preservation of better agricultural land would also be achieved through programs to encourage municipal development on poorer soils, and to channel recreational and industrial development to lands less suited for agriculture. The Ontario Ministry of Agriculture is also committed to developing guidelines that apply agricultural interests to Official Regional Plans (23).

The guidelines presented in 1977 (22) specify that the CLI could be used to identify prime agricultural land. Once the land capabilities are identified, the allocation of land among land uses should be evaluated. This distribution of land should reflect the priority of agriculture, however, if agricultural capabilities exist. If land is designated as agricultural, it should be incorporated into the Official Plan of the region and its supporting land use map. High capability lands should be given the greatest protection, and uses compatible to its long-term retention for agriculture should be specified. Once agricultural land is incorporated into the Official Plan, it can be used only for agricultural or agriculturally compatible purposes. The agricultural use specification can be changed only if the Official Plan is amended. Thus, it is the ease or difficulty with which the Official Plan can be altered which determines whether or not land remains agricultural.

## **LAND TENURE PROGRAMS**

Land tenure is an issue closely related to land use because land use combines human and land resource inputs. The owner most frequently determines how the land will be utilized. If ownership of a certain quality land is restricted to farmers, the land will likely be used for agricultural production.

### **Ownership Control**

The owner-operated family farm is a concept traditional to North American agriculture. Although the feudal land system did exist in Quebec during 1626-1854, immigrants left Europe for Canada to get away from the restrictive feudal land tenure system. A land system allowing maximum individual control evolved in Canada as a result (11).

Canadian settlement policies established the owner-operated family farm as the predominant form of agricultural production unit (25). Technological changes in agriculture resulted in an increase in the scale of farming, and a shift from single proprietorship to partnerships or family corporations.<sup>5</sup> These

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<sup>5</sup>Family corporations are farm corporations in which the immediate family holds a majority of the shares, resides on the farm, and provides most of the labor.

changes have caused concern about the economic survival of family farms, their ability to compete with commercial corporations or communes, and the effect of their decline on the rural community (3).

Boylan argues that there are three traditional forms of tenancy—full owner, part owner, and tenant (5). The full owner has the most security and freedom for decisionmaking of the three tenure forms. Full ownership facilitates the adoption of improved farming practices and effective long-range farm plans necessary for efficient use of farm resources.

Part owners and tenants rent or work on shares for others. This type of tenure involves a lease in which the landlord conveys rights of use and possession of a given property for a definite period of time in return for payment. Rental contracts are based on custom and tend to be fairly rigid. Insecurity in rental tenure, which results in the movement of operators from farm to farm, often affects the efficiency of farm resource use. Rental tenants typically do not make the long-term decisions necessary for continued efficient agriculture, such as those decisions relating to soil maintenance. Consequently, rental tenancy conflicts with social goals concerning the long-term existence of agriculture (5).

When nonresidents, foreigners, or commercial corporations own the land, they often act as absentee landlords, renting the land to farmers. Foreign, nonresident, and commercial corporate ownership of agricultural land has thus been a focus of land tenure programs in Canada. Foreign investors and commercial corporations, with access to capital not available to Canadian family farmers, are investing in land as a hedge against inflation. Since they can use their capital resources to buy land at prices unrelated to the return from agricultural production, they are perceived to be driving up the price of agricultural land (7). Family farmers with a smaller capital base thus find it increasingly difficult to compete for land resources needed for efficient agriculture or to transfer land to the next generation of young farmers. Saskatchewan, Manitoba, and Alberta have developed legislation to control foreign, nonresident, and commercial corporation ownership of land.

### Saskatchewan

The Saskatchewan Farm Ownership Act of 1974, as amended, was developed on the premise that Provincial residents who were involved in day-to-day agricultural operations and who spend a major part of their time and agricultural income in the Province should control agricultural resources. In addition, they should be protected to some extent from capital resources accumulated in other industries or countries (29).

Under the Farm Ownership Act, implemented by the Farm Ownership Board, nonresidents<sup>6</sup> and nonagricultural corporations<sup>7</sup> are prohibited from owning more than 65 hectares or a quarter section. Nonresidents need not dispose of land held prior to 1974 or of holdings acquired between March 31,

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<sup>6</sup>A resident is defined as one who lives in Saskatchewan for 183 days or more a year, or within 20 miles of the Saskatchewan border. This includes U.S. citizens who may own land on both sides of the border.

<sup>7</sup>An agricultural corporation is defined as a corporation primarily engaged in farming where at least 60 percent of both the voting and nonvoting stock is owned by resident farmers (27).



1974, and September 15, 1977, if the assessed value of the holdings for taxation is not greater than \$15,000 (27).

A nonresident holding land in excess of the amount stipulated in the Act has 5 years from the date of becoming a nonresident to dispose of the excess land unless he or she is a former farmer<sup>8</sup> in which case the land may continue to be held regardless of residence status. Former farmers may also transfer their land to direct relatives—spouse, child, grandchild, brother, sister, nephew, niece, or spouse thereof, regardless of their residence status (27). Nonresidents intending to become a resident within 3 years may with the permission of the Farm Ownership Board acquire more than 65 hectares during the 3-year period (27).

Nonagricultural corporations with holdings in excess of 65 hectares prior to March 31, 1974, must dispose of the excess land by January 1, 1994, and submit a land holding disclosure statement to the Farm Ownership Board once a year (27).

The Act is enforced by the Farm Ownership Board, which may conduct investigations into land ownership. Anyone who does not comply with or impedes an investigation is subject to a maximum fine of \$1,000. Anyone found guilty of contravening the Act is liable for a \$10,000 fine, a 6-month imprisonment, or both. A corporation violating the law is subject to a maximum fine of \$100,000; every corporation officer involved is liable for a maximum fine of \$10,000, a 6-month imprisonment, or both. The Board may also order nonresidents or nonagricultural corporations to divest of any land over that amount permitted (27).

A computer land registry system, based on a survey of all rural municipalities providing information on 5,000 nonresidents and 1,000 corporations, is used to enforce the Act. The survey forms the basis of a continuing registry used to monitor land transfers (29). Legislation is being formulated requiring residence to be declared as part of a land transfer.

## Manitoba

Under the Manitoba Agricultural Lands Protection Act of June 1977, as amended and administered by the Agricultural Lands Protection Board, nonresidents<sup>9</sup> may own no more than 8 hectares of land. A nonresident can own land in excess of 8 hectares if it was owned prior to April 1, 1977, or if right to the title for the land arose prior to that date (18).

If a corporation becomes a nonresident through the sale of shares, or if a nonresident corporation acquires land in excess of 8 hectares through a legal settlement, it has 2 years to dispose of the excess land. The Board may take legal action to dispose of land acquired by a nonresident in excess of the amount stipulated if the nonresident has not done so within 2 years of notification (18).

Investigations may be conducted to implement the Act. Any person who does not supply information requested is liable for a maximum fine of \$500.

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<sup>8</sup>A former farmer is defined as someone who at some time in the past lived in Saskatchewan and farmed the land for 5 years.

<sup>9</sup>A Canadian resident is defined as a Canadian citizen or landed immigrant actually living in Canada or a corporation the majority of whose issued voting and nonvoting shares is owned by Canadian citizens permanently residing in Canada.

Any individual or corporation contravening the law is liable for a maximum fine of \$15,000. In addition, any corporation officer responsible for contravention of the law is liable for a maximum fine of \$15,000. Enforcement is ensured through sworn declarations on citizenship attached to the land transfer (18).

## **Alberta**

Foreign ownership of land in Alberta is controlled by the Foreign Ownership of Land (temporary) Regulations established by an Order-in-Council under Section 33 of the Citizenship Act on April 26, 1977. These temporary regulations will eventually be supplanted by the Foreign Ownership of Land Regulations passed under the dual authority of the Agricultural and Recreational Land Ownership Act and Section 33 of the Citizenship Act.<sup>10</sup> (1)

Under the regulations, ineligible persons—non-Canadians and temporary residents—and corporations with 50 percent or more of their shares or memberships held by ineligible persons cannot own more than 8 hectares of controlled land. Controlled land is defined as any land outside the boundaries of a city, town, new town, village, or summer village. Controlled land, however, may be acquired by a foreign state for diplomatic or consular purposes. The area limitation does not apply to controlled land transferred through inheritance. There are no restrictions on urban property (1).

Enforcement of the regulation is ensured by sworn declaration attached to land transfers and by investigative procedures carried out by the Foreign Ownership of Land Administration with use of information supplied by Land Titles Branch (1). Contravention of the law is subject to a maximum fine of \$10,000, imprisonment of up to 1 year, or both. Land that is acquired in contravention of the law may be sold by judicial sale. Proceeds from the sale are used to cover sale expenses and any remaining funds up to the amount originally paid for the land are returned to the individual. Any proceeds exceeding the amount originally paid for the land are put into the General Revenue Fund of Alberta (1).

## **Transfer of Ownership**

The transfer of agricultural land from one generation to the next is an integral part of maintaining the owner-operated family farm, ensuring that future farmers are available to utilize the land preserved for agriculture (32). A start in farming, however, requires substantial capital resources. As land prices continue to increase, the need for capital for young farmers entering the industry becomes increasingly acute.

## **Saskatchewan**

The Saskatchewan Land Bank, established in 1972 by the Land Bank Act and administered by the Land Bank Commission, was developed to alleviate some of the problems associated with the generational transfer of land. Its objectives were to develop a viable agricultural industry in Saskatchewan and

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<sup>10</sup>As of October 1978, Bill 40 was not yet in effect. Regulations under Bill 40, however, will not differ in intent from the temporary regulations but will be more detailed.



provide for a transfer of farms from generation to generation rather than have family farms absorbed by large farm units. The Land Commission, a government agency, purchases land, thereby absorbing the capital costs associated with land transfer. It then rents the land to applicant farmers. The land bank program provides continuous sales opportunities to Saskatchewan farmers and enables individuals to begin farming independently of substantial family assistance. It also encourages the perpetuation of viable family farm units through the transfer of land to direct descendants (30).

Although the land bank program involves the transfer of land through rental tenancy, efforts have been made to eliminate this type of transfer's detrimental effects on efficient resource utilization. Land Bank leases, for example, are long term, and the Commission reimburses the lessee for capital improvements made during tenure which (it is expected) would provide the security necessary to make long-term investment decisions to use resources efficiently.

Under the program, the Land Bank Commission may purchase land from anyone wishing to sell. In instances where the Commission must allocate available funds among several offers for sale, it will purchase by order of priority from farmers who: (1) want to retire and transfer their land to a direct descendant, (2) are selling land that can be used to establish a viable farm unit, (3) have large tracts of land on which two or more operators can be supported, (4) have parcels of land constituting full units, or (5) have no other sale alternative (31).

The Commission purchases land at market value. This is determined through an appraisal process in which the productive value of the cultivated portion of the sale property is correlated with the productive value and sale price of cultivated properties of similar soil quality in the same area. The productive value is determined through tax assessment data. Thus, the Commission price is essentially determined by the relationship between prices of recent land sales in the area and the assessed value of the land for taxation purposes. A similar process is used to determine the market value of grazing land. Assessments are also made of the value of buildings and other improvements on the property (31).

Land purchased by the Commission is allocated to lessees on the basis of a point competitive system if there is more than one applicant for a given piece of land. Applicants are scored on their income potential, skill, age, vendor's preference, and potential disruption of existing farming enterprises. The applicant must declare an intention to make farming the principal occupation, and be of legal age, a resident at the time of leasing and during tenure, and a Canadian citizen or immigrant. The applicant's and spouse's combined average annual income for the preceding 3 years must not exceed an amount annually determined by the Commission.<sup>11</sup> The applicant's and spouse's net worth may not exceed \$121,000 in 1979. Applicants gain or lose points if their projected net income, projected land base in work units, or age is outside the optimal range established by the Commission. Points are gained for education, experience, and for an indication from the vendor that the applicant is the preferred recipient of the land. Points are lost for the average distance in

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<sup>11</sup>Based on the composite index of wages for Saskatchewan in 1977/78, this amount was \$20,000 in 1979.

miles that the piece of land applied for is from other land units the applicant is farming (31).

Applicants scoring highest are then interviewed to assess their motivation, management ability, and other characteristics, all of which are also numerically scored. The applicant with the highest cumulative point score, unless otherwise determined by the Commission, is awarded the lease (31).

The lease remains in effect until the lessee reaches the age of 65 or dies. The lessee may stipulate in writing if the lease is to be passed on to a direct descendant. After the age of 65, short-term leases may be granted under certain circumstances.

Since June 1, 1978, rent is based on the production value of the land which is calculated from the prices of oilseeds, wheat, and barley, and the long-term yield of equal quality land in the area. Prior to that time, rent was based on a percentage of the land's market value. The lessee is responsible for the payment of taxes (31).

Lessees have the option to purchase land after leasing from the Commission for 5 years. The land is sold to lessees at its market value at the time of sale. Lessees purchasing land are entitled to an earned "homestead quarter" refund made by the Commission on the purchase price of a quarter section of land. If the lessee lives on the rented land, the inhabited quarter section is the section on which the refund is paid. If the lessee does not live on the rented land, a quarter section is designated as the homestead quarter on which the refund is paid. The refund is 20 percent of the price paid by the purchaser for the quarter section, to a maximum of \$5,000, paid over a period of 5 years following the land transfer. In order to receive the refund, the purchaser must be actively engaged in farming and remain a resident of Saskatchewan during the 5 years, or the balance of the refund is forfeited (31).

Buildings and improvements on the property are sold under a long-term agreement to the lessee. When the lease expires, the Commission purchases the lessee's earned equity based on the market value of the improvements, thus ensuring that lessees receive the benefits of their investment decisions. This combined with the homestead refund means that the lessee builds equity while renting from the Commission (31).

## Effects of the Land Tenure Programs

During 1972-77, the Land Bank Commission acquired 354,000 hectares of land for a total cost of \$81 million. This land as of December 31, 1977 was being leased to 1,912 lessees through 2,009 leases (30).

In Saskatchewan, nonresidents purchased a total of 59,877 hectares in 1976, compared to 56,769 hectares in 1977 (28).

Compiled data on foreign land transactions in Manitoba is unavailable (19).

In Alberta, the amount of land purchases by non-Canadians and foreign corporations during 1976-77, as monitored under the Foreign Ownership of Land Regulations, declined 60 percent. During January-August 1978, foreign purchases were running 89 percent behind purchases for the same period in 1977. In 1977, foreign purchases accounted for 2 percent of total area of rural sales, compared to 5 percent of total rural sales in 1976 (2).

## LAND USE AND TENURE IN PERSPECTIVE

The dominant themes that emerge from the land use and tenure programs are that Canadian farmland prices have been increasing and that these increases affect land allocation to agriculture and land tenure patterns. In order to fully assess these themes, it is necessary to know: (1) how much agricultural land is actually being lost due to nonagricultural use (in this case, urbanization), (2) what changes have occurred in land tenure patterns, and (3) what factors influence farmland prices in Canada.

### Loss of Agricultural Land Through Urbanization

D. M. Gierman (15) has determined that during 1966-71, 12,801 hectares of class 1-4 agricultural land were irretrievably converted to urban use annually in Canada. The highest rates of conversion occurred in Ontario and Alberta, where an average of 6,199 and 2,046 hectares, respectively, of class 1-4 agricultural land were annually converted (table 6). Over 80 percent of the land converted was formerly classified class 1-4 for agriculture. The converted land, however, represents less than 1 percent of total class 1-4 land in those two Provinces.

The annual loss of production due to the permanent reallocation of land to urban uses can be estimated by converting the amount of class 1-4 agricultural land annually incorporated into cities to a class 1 equivalent, proportionately allocating the class 1 equivalent land to crops according to the 1976 cropping pattern, and multiplying the area allocated to each crop by the potential yield for that crop on class 1 equivalent land (tables 7-10). According to these calculations, losses of potential production due to the direct incorporation of land into cities in the short term (1 year) and in the long run (20 years), assuming constant 1966-71 rates, are relatively small in the three Prairie Provinces. Loss of potential production due to land use changes in Ontario, however, is fairly substantial, particularly in the long term. Declines in production of the major crops in Ontario by 1996 could range from almost 4 percent of average production of tame hay to over 6 percent of rye (tables 7-10).

Manning and McCuaig (21) quantified the amount of CLI class 1-4 agricultural land likely to be affected by urbanization by looking at CLI class 1-4 land within a 50-mile radius of 19 of Canada's major Census Metropolitan Areas.<sup>12</sup> Fifty-four percent of Canada's class 1 land and 21 percent of Canada's class 1-4 land is within 50 miles of the specified areas. Approximately 4.5 million hectares of class 1-4 land is located within the fringe areas of urban centers in Ontario. Applying the same methodology used to determine the productive capacity of agricultural land directly incorporated into urban centers, it is evident that the productive capacity of the urban fringe area in Ontario (table 7) exceeds present production levels for the Province

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<sup>12</sup>Census Metropolitan Areas, as designated by Statistics Canada, are urban areas with over 100,000 inhabitants. The 19 areas are Edmonton, Calgary, Saskatoon, Regina, Winnipeg, Thunder Bay, Sudbury, Windsor, Toronto, Kitchner, St. Catharines, Hamilton, London, Ottawa, Montreal, Quebec, Chicoutimi, St. John, and Halifax.



Table 6—Average annual conversion rates of rural land of various agricultural capabilities to urban uses, 1966-71

Province	Class 1	Class 2	Class 3	Class 4	Total class 1-4	Class 5	Class 6	Total class 5-6
	<i>Hectares</i>							
Ontario	2,496	1,789	1,503	411	6,199	293	219	512
Manitoba	—	538	409	5	952	28	60	88
Saskatchewan	—	127	63	29	219	8	4	12
Alberta	564	747	471	264	2,046	165	186	351
Other Provinces	76	1,285	827	1,197	3,385	498	70	326
Total Canada	3,136	4,486	3,273	1,906	12,801	992	539	1,531

— = not applicable.

Source: D. M. Gierman. *Rural to Urban Land Conversion*. Fisheries and Environment Canada, Lands Directorate, Occasional Paper No. 16, Sept. 1977.

and is over 50 percent of the total production potential on all CLI class 1-4 land in the Province (table 2).

This means that a substantial quantity of agricultural land in Ontario is subject to change from agricultural to urban-oriented use. The exact proportion of land that may actually change, however, cannot be determined from available information. Although the potential for increased crop production in Ontario is substantial due to the combination of good land and favorable climate, this potential is affected by competition between agriculture and urban development.

The situation in the Prairie Provinces is considerably different. The amount of land located in the fringe area of cities in Manitoba, Saskatchewan, and Alberta equals 1.4, 3.0, and 2.7 million hectares, respectively (21). The productive potential of this land is equal to about one-fourth to one-half of present production in Manitoba, one-fourth in Saskatchewan, and one-third in Alberta.

## Land Tenure

Total Canadian farm area has been declining—down about 1.4 million hectares or 2 percent during 1961-76. A 25-percent decrease in eastern Canada was partially offset by a 5-percent increase in western Canada. Farmland declined about 1.3 million hectares in Ontario and increased 1.1 million hectares in Alberta. Thus, the amount of farmland is declining in eastern Canada, which has the best agroclimatic potential for food production, and increases in farmland are occurring in western Canada which has considerably less agroclimatic potential. Land which can grow fruit, vegetables, and corn in eastern Canada is being replaced by land suitable for barley and hay in western Canada.

Average farm size in Canada continued to increase during 1971-76 from 187 hectares to 201 hectares. The largest increases in size occurred in Manitoba and Saskatchewan, where farms increased 9 percent from 220 to 240 hectares and 342 to 374 hectares, respectively.

During 1971-76, the total number of farms declined about 18 percent (table 11). The percentage of farms fully operator owned in Canada declined

Table 7 — Ontario: Estimated loss in crop production on class 1 equivalent land due to conversion to urban uses

Crop	Class 1 equivalent area in crops converted annually to urban uses	Productive capacity of converted agricultural land				Productive capacity of urban fringe			
		1 year		20 years		Class 1 equivalent area in urban fringe		Production on urban fringe area <sup>5</sup>	
		Production on converted area <sup>1</sup>	Percentage of average production <sup>2</sup>	Production on converted area <sup>3</sup>	Percentage of average production <sup>4</sup>	1,000 hectares	1,000 metric tons	1,000 metric tons	Percentage of average production <sup>6</sup>
	Hectares	Metric tons	Percent	Metric tons	Percent				Percent
Wheat	318	1,704	0.28	34,080	5.5	229	1,227	199	199
Oats	280	958	.25	19,160	5.0	202	691	182	182
Barley	221	955	.24	19,100	4.9	159	687	175	175
Rye	34	129	.31	2,580	6.1	25	95	226	226
Corn	947	8,059	.25	161,180	4.9	682	5,804	177	177
Tame hay	1,635	12,263	.20	245,260	3.9	1,177	8,828	143	143
Fodder corn	518	21,756	.22	435,120	4.4	373	15,666	159	159
Potatoes	27	810	.21	16,200	4.1	19	570	147	147
Other	1,114	—	—	—	—	802	—	—	—
Total	5,094	—	—	—	—	3,668	—	—	—

— = not applicable.

<sup>1</sup>Class 1 equivalent area in crops converted annually to urban use times potential yield on class 1 equivalent land (from table 2).

<sup>2</sup>  $\frac{(1976 \text{ area times } 1967-76 \text{ yield})}{(\text{Annual production on converted area})}$  times 100.

<sup>3</sup>Annual production on converted area times 20.

<sup>4</sup>  $\frac{(1976 \text{ area times } 1967-76 \text{ yield})}{(\text{Annual production on area converted over 20 years})}$  times 100.

<sup>5</sup>Area in urban fringe times potential yield on class 1 equivalent land (from table 2).

<sup>6</sup>  $\frac{(1976 \text{ area times } 1967-76 \text{ yield})}{(\text{Annual production on urban fringe area})}$  times 100.

Sources: D. M. Gierman. *Rural to Urban Land Conversion*. Fisheries and Environment Canada, Lands Directorate, Occasional Paper No. 16, September 1977; and E. W. Manning and J. D. McCuaig. *Agricultural Land and Urban Centres, an Overview of the Significance of Urban Centres to Canada's Quality Agricultural Land*. Fisheries and Environment Canada, Lands Directorate, July 1977.



Table 8—Manitoba: Estimated loss in crop production on class 1 equivalent land due to conversion to urban uses

Crop	Class 1 equivalent area in crops converted annually to urban uses	Productive capacity of converted agricultural land				Productive capacity of urban fringe		
		1 year		20 years		Class 1 equivalent area in urban fringe	Production on urban fringe area <sup>3</sup>	Percentage of average production <sup>4</sup>
		Production on converted area <sup>1</sup>	Percent	Production on converted area <sup>1</sup>	Percent			
	Hectares	Metric tons		Metric tons	Percent	1,000 hectares	1,000 metric tons	Percent
Wheat	242	702	0.03	14,040	0.53	350	1,015	38
Oats	77	246	.03	4,920	.57	113	362	42
Barley	104	395	.03	7,900	.59	152	578	43
Mixed grains	10	32	.02	640	.45	16	51	36
Rye	6	15	.03	300	.57	8	20	38
Buckwheat	3	3	.02	60	.40	4	4	27
Corn	1	4	.02	80	.33	2	8	33
Tame hay	89	596	.03	11,920	.51	129	864	37
Fodder corn	2	45	.02	900	.43	3	67	32
Flaxseed	33	50	.04	1,000	.70	48	72	51
Sunflower	3	3	.02	60	.33	5	5	28
Rapeseed	15	23	.02	460	.49	21	32	34
Mustard seed	1	1	.02	20	.33	2	2	67
Other crops	15	—	—	—	—	19	—	—
Summer fallow	145	—	—	—	—	211	—	—
Total	746	—	—	—	—	1,083	—	—

— = not applicable.

<sup>1</sup>Class 1 equivalent area in crops converted annually to urban use times potential yield on class 1 equivalent land (from table 3).<sup>2</sup> $\frac{(1976 \text{ area times } 1967-76 \text{ yield})}{(\text{Annual production on converted area})}$  times 100.<sup>3</sup>Annual production on converted area times 20.<sup>4</sup> $\frac{(1976 \text{ area times } 1967-76 \text{ yield})}{(\text{Annual production on area converted over 20 years})}$  times 100.<sup>5</sup>Area in urban fringe times potential yield on class 1 equivalent land (from table 3).<sup>6</sup> $\frac{(1976 \text{ area times } 1967-76 \text{ yield})}{(\text{Annual production on urban fringe area})}$  times 100.

Sources: D. M. Gierman, *Rural to Urban Land Conversion*, Fisheries and Environment Canada, Lands Directorate, Occasional Paper No. 16, September 1977; and E. W. Manning and J. D. McCuaig, *Agricultural Land and Urban Centres, an Overview of the Significance of Urban Centres to Canada's Quality Agricultural Land*, Fisheries and Environment Canada, Lands Directorate, July 1977.

Table 9—Saskatchewan: Estimated loss in crop production on class 1 equivalent land due to conversion to urban uses

Crop	Class 1 equivalent area in crops converted annually to urban uses	Productive capacity of converted agricultural land			Productive capacity of urban fringe		
		1 year		20 years	Class 1 equivalent area in urban fringe	Production on urban fringe area <sup>5</sup>	Percentage of average production <sup>4</sup>
		Production on converted area <sup>1</sup>	Percentage of average production <sup>2</sup>				
	Hectares	Metric tons	Percent	Metric tons	Percent	1,000 hectares	Percent
Wheat	67	194	0.00	3,880	0.03	884	22
Oats	6	19	.00	380	.03	79	22
Barley	11	42	.00	840	.03	148	22
Rye	1	3	.00	60	.04	14	26
Tame hay	8	54	.00	1,080	.04	108	25
Rapeseed	3	5	.00	100	.03	36	12
Other crops	4	—	—	—	—	39	—
Summer fallow	67	—	—	—	—	887	—
Total area	167	—	—	—	—	2,195	—

— = not applicable.

<sup>1</sup>Class 1 equivalent area in crops converted annually to urban use times potential yield on class 1 equivalent land (from table 4).

<sup>2</sup> $\frac{\text{(1976 area times 1967-76 yield)}}{\text{(Annual production on converted area)}}$  times 100.

<sup>3</sup>Annual production on converted area times 20.

<sup>4</sup> $\frac{\text{(Annual production on area converted over 20 years)}}{\text{(1976 area times 1967-76 yield)}}$  times 100.

<sup>5</sup>Area in urban fringe times potential yield on class 1 equivalent land (from table 4).

<sup>6</sup> $\frac{\text{(1976 area times 1967-76 yield)}}{\text{(Annual production on urban fringe area)}}$  times 100.

Sources: D. M. Gierman. *Rural to Urban Land Conversion*. Fisheries and Environment Canada, Lands Directorate, Occasional Paper No. 16, September 1977; and E. W. Manning and J. D. McCuaig. *Agricultural Land and Urban Centres, an Overview of the Significance of Urban Centres to Canada's Quality Agricultural Land*. Fisheries and Environment Canada, Lands Directorate, July 1977.

Table 10—Alberta: Estimated loss in crop production on class 1 equivalent land due to conversion to urban uses

Crop	Class 1 equivalent area converted annually to urban uses	Productive capacity of converted agricultural land			Productive capacity of urban fringe		
		1 year		20 years	Class 1 equivalent area in urban fringe	Production on urban fringe area <sup>4</sup>	Percentage of average production <sup>4</sup>
		Production on converted area <sup>1</sup>	Percentage of average production <sup>2</sup>				
	Hectares	Metric tons	Percent	Metric tons	1,000 hectares	1,000 metric tons	Percent
Wheat	364	1,056	0.03	21,120	451	1,308	32
Oats	118	378	.03	7,560	146	467	32
Barley	370	1,406	.03	28,120	457	1,737	35
Mixed grains	18	58	.02	1,160	22	70	29
Rye	12	30	.03	600	15	38	35
Tame hay	250	1,675	.03	33,500	310	2,077	37
Flaxseed	5	8	.03	160	6	9	32
Rapeseed	49	74	.03	1,480	60	90	32
Mustard seed	1	1	.01	20	2	2	25
Other crops	49	—	—	—	61	—	—
Summer fallow	424	—	—	—	525	—	—
Total	1,660	—	—	—	2,055	—	—

— = not applicable.

<sup>1</sup>Class 1 equivalent area in crops converted annually to urban use times potential yield on class 1 equivalent land (from table 5).

<sup>2</sup> $\frac{\text{(1976 area times 1967-76 yield)}}{\text{(Annual production on converted area)}}$  times 100.

<sup>3</sup>Annual production on converted area times 20.

<sup>4</sup> $\frac{\text{(1976 area times 1967-76 yield)}}{\text{(Annual production on area converted over 20 years)}}$  times 100.

<sup>5</sup>Area in urban fringe times potential yield on class 1 equivalent land (from table 5).

<sup>6</sup> $\frac{\text{(1976 area times 1967-76 yield)}}{\text{(Annual production on urban fringe area)}}$  times 100.

Sources: D. M. Gierman, *Rural to Urban Land Conversion*. Fisheries and Environment Canada, Lands Directorate, Occasional Paper No. 16, September 1977; and E. W. Manning and J. D. McCuaig, *Agricultural Land and Urban Centres, an Overview of the Significance of Urban Centres to Canada's Quality Agricultural Land*. Fisheries and Environment Canada, Lands Directorate, July 1977.

Table 11 — Number and proportion of census farms by tenure of operator, 1971 and 1976

Province	Owner				Part Owner			
	1971	1976	1971	1976	1971	1976	1971	1976
	<i>Number</i>		<i>Percentage of total</i>		<i>Number</i>		<i>Percentage of total</i>	
Ontario	69,862	50,865	74	66	19,877	21,715	21	28
Manitoba	21,608	17,238	62	58	11,184	10,734	32	36
Saskatchewan	41,499	36,612	54	53	30,097	27,398	39	39
Alberta	37,193	33,584	59	59	21,284	20,206	34	35
Canada	251,066	189,063	69	63	95,862	93,757	26	31
	Tenant				Total			
	1971	1976	1971	1976	1971	1976		
	<i>Number</i>		<i>Percentage of total</i>		<i>Number</i>			
Ontario	4,983	4,403	5	6	94,722	76,983		
Manitoba	2,189	1,991	6	7	34,981	29,963		
Saskatchewan	5,374	5,568	7	8	76,970	69,578		
Alberta	4,225	3,520	7	6	62,702	57,310		
Canada	19,200	17,298	5	6	366,128	300,118		

Source: R. Davianlt, *Selected Agricultural Statistics for Canada*. Agriculture Canada, Ottawa, 1977.

from 69 percent of the total number of farms in 1971 to 63 percent of the total in 1976, and the number of farms partly owned or fully rented by the operator increased from 26 to 31 percent and 5 to 6 percent of the total number of farms, respectively. The percentage of owner-operated farms in Alberta and Saskatchewan remained about the same during 1971-76, although the total number of owner-operated farms in Canada declined. The largest decreases in the percentage of owner-operated farms occurred in Manitoba and Ontario, where the percentage of owner-operated farms declined from 62 to 58 percent and 74 to 66 percent, respectively, during 1971-76 (table 11).

## Farmland Prices

Canadian farmland prices increased 121 percent in nominal terms during 1971-76 from an average of \$246.31 per hectare to an average of \$543.72 per hectare. The largest increases in farmland price occurred in Ontario, where farm prices increased 150 percent, from an average of \$802.40 per hectare in 1971 to an average of \$2,007.01 in 1976. The smallest increases occurred in Manitoba, where farm price increased 94 percent, from an average of \$178.65 per hectare in 1971 to \$346.38 in 1976.

Price reflects the intersection of demand for and supply of land. Thus the allocation of land between divergent uses relates to the cumulative effect of the demand for those uses upon its price. Farmland price is affected by the interaction of farm and nonfarm demand. Farm purchasers are defined as those individuals for whom the price of land is determined by past and expected returns from the land for agricultural production. Nonfarm purchasers are individuals for whom the price of land is determined by past and



expected returns from the land for other than agricultural purposes (13). Foreign purchasers of land are considered nonfarm buyers when the price at which they are willing to buy land is determined by economic conditions in their domestic economy rather than returns from Canadian agriculture, even if the land they purchase remains in agriculture through tenant farming.

The determinants of farmland price relating to nonfarm demand include the presence of minerals for extraction, forests, population pressure on use of the land which is manifest in urbanization, construction of transportation systems, speculation, and recreational or residential construction. Those relating to farm demand for land include farm income, pressures to enlarge farm holdings, and advances in agricultural technology (13).

Land prices are an underlying focus of Canadian agricultural land programs, particularly since the impact of nonagriculturally oriented demand on land prices influences the allocation of land away from agriculture and affects preferred land tenure patterns. The land use and tenure programs therefore deal with the effects of urban-oriented and foreign or nonresident nonfarm purchasers on land prices, use allocation, and tenure patterns.

Since farmland prices are determined by a combination of farm and nonfarm demand, the question arises as to their relative effects on Canadian farmland prices (table 12). The effects of farm and nonfarm demand on farmland prices were estimated by means of an econometric model. Because Canadian programs focus on the effect of urban oriented nonfarm buyers on land price, the number of urban and rural nonfarm residents in each of the Provinces (Ontario, Manitoba, Saskatchewan, and Alberta) was used as a proxy for nonfarm demand (table 13). It was assumed that each additional urban and nonfarm rural resident represents potential demand for residences, transportation, or other nonagricultural uses. Net farm income was used as a measurement of the effect of farm demand on land prices (table 14). It was assumed that the supply of land is constant and that the impact of a change in farm income on land prices is distributed over a 2-year period following the year of the change. The analysis is for the period 1960-76.

The following equation was used:

$$Y_{i,t} = \alpha_i + \beta_1 X_{1,i,t-1} + \gamma_1 X_{1,i,t-2} + \delta_1 X_{2,i,t} + \epsilon_i$$

where  $Y$  = farmland price in real terms

$i$  = total Canada (C), Alberta (A), Manitoba (M), Ontario (O), and Saskatchewan (S)

$X_1$  = net farm income in real terms

$X_2$  = urban and nonfarm rural population

The parameters of the above equation were estimated by ordinary least squares regression for each of the four Provinces and total Canada, with the following results:

		$\bar{R}^2$	D.W.	C.V.
$Y_{C,t}$	$= -20,126 + 1.7024 X_{1,C,t-1} + 2.1009 X_{1,C,t-2} + 1.7765 X_{2,C,t}$ (4.31) (4.77) (10.67)	0.97	1.56	3%
$Y_{A,t}$	$= -116.73 + 0.5628 X_{1,A,t-1} + 2.1174 X_{1,A,t-2} + 2.9117 X_{2,A,t}$ (2.10) (3.76) (0.80)	0.94	1.70	4%

$$\begin{aligned}
Y_{M,t} &= -953.11 + 0.9173 X_{1,M,t-1} + 1.2098 X_{1,M,t-2} + 2.8765 X_{2,M,t} & 0.77 & 1.88 & 7\% \\
&\quad (1.75) & (1.73) & (1.59) \\
Y_{O,t} &= -10,214 + 4.5268 X_{1,O,t-1} + 3.0839 X_{1,O,t-2} + 1.7994 X_{2,O,t} & 0.96 & 2.07 & 6\% \\
&\quad (3.95) & (2.42) & (7.54) \\
Y_{S,t} &= -9,501 + 1.1926 X_{1,S,t-1} + 1.6129 X_{1,S,t-2} + 19.218 X_{2,S,t} & 0.89 & 1.67 & 6\% \\
&\quad (3.51) & (4.06) & (5.07)
\end{aligned}$$

The elasticities of the two explanatory variables for each of the four Provinces and total Canada are as follows:

Province	X <sub>1</sub>	X <sub>2</sub>
Ontario	.70	1.61
Manitoba	.29	1.17
Saskatchewan	.39	2.20
Alberta	.28	.74
Total Canada	.44	1.35

Results of the analysis indicate that the two variables were significant and accounted for most of the variation in land prices during 1960-76. The

Table 12—Value of farmland deflated by CPI

Year	Ontario	Manitoba	Saskatchewan	Alberta	Total Canada
<i>Million dollars</i>					
1960	4,172	1,312	3,048	2,748	14,847
1961	4,415	1,350	3,102	2,777	15,274
1962	5,238	1,444	3,888	3,570	17,572
1963	5,244	1,546	4,392	3,847	18,460
1964	5,551	1,735	4,952	4,240	19,960
1965	5,782	1,967	5,694	4,785	21,858
1966	6,153	2,100	6,242	5,109	23,448
1967	6,824	2,250	6,661	5,520	25,118
1968	7,554	2,305	6,554	5,756	26,227
1969	8,398	2,046	5,539	5,395	25,466
1970	7,667	2,129	5,967	5,411	25,640
1971	7,718	2,046	5,759	5,256	25,181
1972	7,688	1,952	5,496	5,071	24,704
1973	8,671	2,076	5,917	5,314	26,783
1974	10,173	2,387	6,675	6,152	30,914
1975	11,586	2,456	7,831	6,780	34,536
1976	12,567	2,666	8,742	6,950	37,204

Sources: Statistics Canada. *Quarterly Bulletin of Agricultural Statistics*. Ottawa, various issues.

Table 13—Urban and rural nonfarm population, 1960-76<sup>1</sup>

Year	Ontario	Manitoba	Saskatchewan	Alberta	Total Canada
<i>Thousands</i>					
1960	5,590	739	610	1,020	15,801
1961	5,730	750	620	1,046	16,165
1962	5,873	760	631	1,072	16,537
1963	6,020	771	641	1,099	16,917
1964	6,171	782	652	1,126	17,306
1965	6,325	793	663	1,154	17,704
1966	6,479	803	675	1,185	18,101
1967	6,654	818	682	1,230	18,535
1968	6,833	834	689	1,277	18,980
1969	7,018	849	696	1,325	19,435
1970	7,207	865	703	1,376	19,902
1971	7,404	880	710	1,427	20,406
1972	7,515	888	713	1,469	20,712
1973	7,627	896	717	1,511	21,022
1974	7,742	904	720	1,555	21,338
1975	7,858	912	724	1,600	21,658
1976	7,985	920	728	1,648	21,958

<sup>1</sup>The data for intercensal years is determined from the average annual rate of increase in population extrapolated between the census years 1961, 1966, 1971, 1976.

Sources: Statistics Canada. *Canada Year Book*. Ottawa, various issues. Canada. *1971 Census of Canada, Population, Urban Rural Distributions*. Ottawa.

elasticities for the number of nonfarm population are greater (ranging from .74 to 2.20) than the elasticities for farm income (ranging from .28 to .70), indicating that the percentage change in farmland prices related to the percentage change in the number of nonfarm population is greater than that relative to the percentage change in farm income. The rate of change in the number of nonfarm population in any time period, however, is relatively small in comparison to the rate of change that can occur in farm income during specified periods. During 1972-75, for example, the rate of increase in nonfarm population was 0.5 percent in Saskatchewan, while the rate of increase in farm income during that period was 40 percent. Thus, given the specified elasticities for the two variables for Saskatchewan, farm income accounts for 94 percent of the increase in farmland prices, while the number of nonfarm purchasers accounts for 6 percent of the increase, assuming no further increases in farm income in the next 2 years. In addition, the total cumulative effect of the increases in net farm income on land prices would not occur until 2 years after the final increase. The annual percentage increase in land prices (1972-75) are attributed to:

Province	Net farm income	Nonfarm purchasers of land
Ontario	85	15
Manitoba	86	14
Saskatchewan	94	6
Alberta	75	25
Total Canada	77	23

Thus during 1972-75, net farm income had a greater impact on land prices than the number of nonfarm purchasers of land.

Table 14—Net farm income deflated by CPI

Year	Ontario	Manitoba	Saskatchewan	Alberta	Total Canada
<i>Million dollars</i>					
1960	586	216	667	399	2,396
1961	609	105	199	400	1,838
1962	673	322	914	549	2,990
1963	593	215	1,062	564	2,924
1964	550	306	643	456	2,427
1965	620	318	885	558	2,893
1966	833	258	1,009	653	3,416
1967	647	284	620	494	2,584
1968	689	296	802	615	2,999
1969	710	212	714	459	2,690
1970	681	146	370	379	2,156
1971	545	254	710	410	2,405
1972	703	266	590	520	2,662
1973	947	494	1,191	886	4,339
1974	1,046	405	1,357	941	4,568
1975	1,074	464	1,616	960	4,886
1976	813	359	1,423	722	4,040

Sources: Statistics Canada. *Net Farm Income*. Ottawa, various issues.

## CONCLUSIONS

Although potential for major losses in Canadian agricultural production exists, particularly in Ontario, this does not necessarily mean that this land will be lost to production. Measurable losses due to urban pressures appear to be small; losses in the urban fringe may be larger but cannot be pinpointed. If current rates of change do not accelerate precipitously, population pressures



probably will not be a major factor affecting Canada's competitive position in world wheat trade. Evidence indicates that Canada does have the capability to increase wheat production under current cropping patterns to 32 million tons. The continued attrition of farmland in Ontario, however, could be reflected in increased U.S. exports of those products formerly produced in Ontario, such as fruit.

The rapid increase in farmland prices *per se* may not necessarily mean that agriculture is facing difficulty in competing with urban development for use of the land. Evidence indicates that high product prices are capitalized into land, accounting for its increase in price. The changes in tenure patterns that have occurred between the 1971 and 1976 Census' of Agriculture may also be a reflection of increased returns from agriculture, as farmers move to increase their land base quickly by renting in order to take advantage of high product prices.

Land use programs such as the one implemented by the British Columbia Land Commission Act apparently can stop the reallocation of agricultural land to urban uses. If the general economic environment is not conducive to the allocation of agricultural land to production, however, maintaining that land for future agricultural use may require a substantial social investment.

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